REMARKS

With this Response, claims 1, 9, and 13-35 are pending.

Information Disclosure Statement

The returned Form SB-08 notes that Reference CQ, Helson, was missing page 386. With this response, a new copy of Helson is included. This copy includes all pages, including page 386.

The Office Action at page 2 objects to the Information Disclosure Statement (IDS) filed November 4, 2008 as being voluminous and cumulative. Although the IDS was signed, it is unclear that the references were considered, as no initials appear on Form SB-08 that was returned to Applicant's representative.

The IDS was timely filed with a Request for Continued Examination (RCE). It is appropriate to file an IDS following close of prosecution, if the filing is accompanied by an RCE. MPEP § 706,07(h); 37 C.F.R. § 1.114. Accordingly, the timing of the IDS was proper and consistent with the rules.

MPEP § 609 sets forth duties governing both applicants and examiners regarding IDS practice. Namely, MPEP § 609 states that "applicants and other individuals substantively involved with the preparation and/or prosecution of the application have a duty to submit to the Office information which is material to patentability" and notes that 37 CFR 1.97 and 37 CFR 1.98 provide a mechanism to comply with that duty. The MPEP further states that applicants "may want the Office to consider information for a variety of other reasons; *e.g.*, to make sure that the examiner has an opportunity to consider the same information that was considered by

these individuals, or by another patent office in a counterpart or related patent application filed in another country."

MPEP § 609 states "An information disclosure statement filed in accordance with the provisions of 37 C.F.R. 1.97 and 37 C.F.R. 1.98 will be considered by the examiner assigned to the application" (emphasis added). The IDS in the present case was filed in accordance with 37 C.F.R. §§ 1.97 and 1.98. MPEP § 609 continues, "Once the minimum requirements of 37 C.F.R. 1.97 and 37 C.F.R. 1.98 are met, the examiner has an obligation to consider the information." There is no limitation in 37 C.F.R. 1.97 or 37 C.F.R. 1.98 regarding the length or number of the references. Moreover, such requirements are not provided in MPEP § 609.04(a), which provides guidelines for the content requirements for IDS's.

The applicants sympathize with the examiner regarding the burden these rules place on the examiner. However, applicants have disclosed the references cited in the IDS in discharge of their duty of disclosure provided in 37 C.F.R. 1.56 and in compliance with their ethical obligations. The only threshold requirements for IDS's are provided in 37 C.F.R. 1.97 and 1.98, which applicants submit they have met.

Nevertheless, to expedite prosecution, Applicants provide the following information regarding some of the references that were cited in the IDS. A clean copy of the PTO Form SB-08 is provided in Appendix A, for the convenience of the Examiner during review.

U.S. Patent No. 6,119,104 (Ref. AD) was cited by the Examiner on Form PTO-892 accompanying the Office Action attached as Appendix B during prosecution of co-pending U.S. Application No. 09/430,870.

U.S. Patent No. 6,311,134 (Ref. AE) was cited by the Examiner on page Form PTO-892 accompanying the Office Action attached as Appendix C during prosecution of co-pending U.S. Application No. 09/565,085

U.S. Patent No. 7,054,754 (Ref. AI) mentions symmetry at col. 1, lines 34-36 (Background of the Invention).

Balasubramanian (Ref. CA, 10 pages) is entitled "Computer Perception of Molecular Symmetry". Symmetry is mentioned throughout the document, including in the Introduction and Conclusion sections.

Bauer (ref. CC, 14 pages) mentions symmetry at page 34 (third full paragraph, second line) and at page 41 (second to last line of page).

ChemDraw Chemical Structure Drawing Standard (Ref. CI, 223 pages) mentions symmetry at page 41 (right column), page 59 (right column, under "Changing Steriochemistry" heading), page 108 (left column, line 10), page 130 (right column, line 19), page 147 (right column, footnote), page 148 (right and left columns), page 149 (left column, line 14), and page 162 (left and right columns). Asymmetry is mentioned at page 120 (left column, line 9), page 126 (left column, four lines from bottom), and page 154 (left column, five lines from bottom).

Dittmar (Ref. CK, 8 pages) mentions symmetry at page 188 (right column, line 10).

Downs (Ref. CL, 15 pages) mentions symmetry at page 180 (right column, 12 lines from bottom), page 182 (left column, line 1; right column, line 33), and page 184 (right column, four lines from bottom).

Figueras (Ref. MC, 6 pagcs) mentions symmetry in the abstract and at page 155 (lcft column, lines 34 and 41).

Helson (Ref. CQ, 85 pages) mentions symmetry at page 352 (heading, "Making Rings and Chains Horizontal or Symmetrical" and following paragraph), page 353 (Figure 41), page 366 (Figure 54), page 367 (line 9), page 368 (third line from bottom), page 369 (first through third paragraphs), page 389 (last line), and pages 390-91 (heading, "Use of Fuzzy Symmetry" and following paragraphs).

Judson (Ref. CR, 73 pages) mentions asymmetry at page 54 (line 6).

Molchanova (Ref. CT, 11 pages) mentions symmetry at page 890 (left column, last line), page 894 (Section 4.3, entitled "Symmetry Test), and at page 896 (right column, line 16 of Example 3 and fourth line from bottom).

Rusinko (Ref. CV, 4 pages) mentions symmetry at page 252 (right column, last line).

Sadowski (Ref. CW, 8 pages) mentions asymmetry page 1001 (left column, line 18 of third full paragraph and right column, line 15 of first full paragraph), page 1002 (left column, third line from bottom and right column, first and fourth lines) and page 1004 (table 5 and left column, last line).

Wipke (Ref. CC1, 26 pages) mentions symmetry at page 155 (first line of second full paragraph).

Wipke (Ref. CD1, 27 pages) mentions asymmetry at page 156 (first line of second full paragraph) and mentions symmetry at page 162 (tenth line of second full paragraph).

Zimmerman (Ref. CE1, 165 pages) mentions symmetry at page 31 (line 16) and at page 82 (line 17).

Zipple (Ref. CF1, 19 pages) mentions symmetry at page 130 (line 4).

Rejection of Claims Under 35 U.S.C. § 101

Claims 1, 13-34 are rejected under 35 U.S.C. § 101 as allegedly being directed to nonstatutory subject matter. The Office Action at page 2 asserts that the claims are not proper process claims because they are not tied to another statutory class (e.g., a computer) and there is no claimed transformation of matter. Applicants disagree.

Independent claim 1 is directed to a computer-implemented method for use in deriving a chemical structure diagram. The method includes the steps of (a) identifying, from a connection table for a chemical structure, an instance of chemical structural symmetry in the chemical structure, wherein the instance of symmetry includes symmetrically equivalent atoms and bonds; (b) laying out symmetrically equivalent atoms and bonds in the chemical structure diagram to express the identified symmetry; and (c) outputting a representation of the chemical structure.

As noted above, independent claim 1 specifies that the method is a "computer-implemented method." As such, Applicant disagrees with the Office Action's implication that the claim includes only a nominal or taken recitation of structure. Rather, the claim language is clear that a computer is necessary for performing the method.

In any event, the claims without a doubt recite a transformation of matter, rendering the subject matter patentable. As provided, the claims are directed to the transformation of chemical structure information provided in a connection table to a representation of chemical structure. The process includes both the identification of symmetry in the chemical structure, as well as laying out the atoms and bonds in the chemical structure to express the indentified symmetry. In *In re Bilski*, the Federal Circuit recognized that "The raw materials of many information-age processes, however, are electronic signals and electronically-manipulated data." 88 USPQ2d 1385, 1397 (Fcd. Cir. 2008). The court continued, "So long as the claimed process is limited to a

practical application of a fundamental principle to transform specific data, and the claim is limited to a visual depiction that represents specific physical objects or substances, there is no danger that the scope of the claim would wholly pre-empt all used of the principle." Id.

Applicants submit that outputting a representation of a chemical structure (i.e., a chemical structure diagram) based on chemical structure information located in a connection table is analogous to the visual depiction of physical objects, discussed in *Bilski*. Id. ("We further note for clarity that the electronic transformation of the data itself into a visual depiction in *Abele* was sufficient; the claim was not required to involve any transformation of the underlying physical object that the data represented."). Such a transformation is clearly a patentable transformation of matter, as recognized by the court. Accordingly, Applicant submits that claims 1 and 13-34 are directed to patentable subject matter.

Rejection of Claims Under 35 U.S.C. § 103

Claims 1, 9, and 13-35 are rejected under 35 U.S.C. § 103(a) as being allegedly obvious over the Helson thesis, in view of Benecke *et al.* The Office Action at page 4 asserts that the Helson thesis teaches indentifying an instance of chemical structural symmetry and positioning atoms and bonds in a chemical structure diagram. At page 7, the Office Action admits, however, that the Helson thesis does not disclose laying out atoms/bonds to express an identified symmetry. The Office Action asserts that Benecke cures this deficiency by teaching the generation of "all configurations." Applicant disagrees.

Benecke describes a chemical structure generator program, MOLGEN. The MOLGEN program does not, however, lay out symmetrically equivalent atoms and bonds in a chemical structure diagram to express the identified symmetry, as required by the current claims. To the

extent the MOLGEN program takes symmetry into account, it does so in identifying symmetry only, not in using symmetry to layout atoms and bonds in a chemical structure diagram. Specifically, the MOLGEN program generates a series of connection tables, which it terms "molecular graphs", that satisfy certain constraints inputted by the user, such as the number of atoms present and the valency of the atoms. (See, e.g., pages 142-143). The molecular graphs created by the MOLGEN program do not, in fact, include laying out atoms and bonds in a ***chemical structure diagram***. For example, in the Abstract, Benecke explains that "***Afterwards*** (i.e., after molecular graphs are produced) these molecular graphs can be displayed on the computer screen" (emphasis added).

The Office Action refers to page 145 of Benecke, which states "MOLGEN is capable of generating all possible configurational isomers, again redundancy free (which also implies the consideration of symmetries)." This statement does not teach or suggest using symmetry to lay out atoms and bonds of a chemical structure in two-dimensional or three-dimensional space. Rather, symmetry is used to avoid redundancy in generating the listing of possible configurational isomers that satisfy the user-prescribed restrictions. By considering symmetry in creating these connection tables, redundancy is avoided. Nowhere does Benecke describe or suggest that the MOLGEN program use symmetry to determinc how to lay out and position atoms and bonds in two-dimensional or three-dimensional space.

Thus, it is clear from Benecke's description that it is limited to, at most, identification of symmetry to produce connection tables (molecular graphs, per Benecke). In contrast, the present invention is directed to producing a chemical structure diagram, which exhibits improved aesthetics, by taking into account the symmetry identified in the molecule to direct how atoms and bonds are laid out the diagram.

Moreover, the consideration of symmetry in laying out atoms and bonds to create a chemical structure diagram was not contemplated at the time Benecke published. In a review article published in 1999, Helson includes symmetry as a "future advance" for structure diagram generation. Helson was aware of MOLGEN in that publication, as it is referenced (endnote 56, referenced from page 392). Thus, four years after publication of Benecke, persons of skill in the art still believed consideration of symmetry in producing chemical structure diagrams was a problem that had not been successfully solved.

Accordingly, claim 1 is not obvious over the Helson thesis in view of Benecke. Claims 9, and 13-35 have comparable limitations to those of claim 1. Accordingly, these claims, as well as the claims that depend from them, are not obvious in view of the cited references.

CONCLUSION

In view of the foregoing remarks, Applicants believe that the pending application is in condition for allowance, which action is respectfully requested. If the Examiner believes that a telephone conference would expedite prosecution, the Examiner is asked to contact the undersigned.

The time for responding to this action has been extended to July 26, 2009 by the accompanying Petition for a Three Month Extension of Time and payment of fee. The Director is hereby authorized to charge Deposit Account 08-0219 the fee of $1,050 for the three-month extension of time. Please charge any other fees that may be due, or credit any overpayments to our Deposit Account No. 08-0219, under Order No. 0103544.00131US2 from which the undersigned is authorized to draw.

Respectfully submitted,

Dated: July 24, 2008

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